ENNEA (EDENTULINA) LONGULA. (Woodcut, fig. 2.)

Testa elongata, pupiformis, rimata, albo-cornea; anfractus 8, *convexiusculi, sutura leviter obliqua et profunda discreti, tenuiter, confertim et oblique lirati, ultimus supra aperturam lævior, haud liratus, antice ad labrum breviter ascendens; apertura inverse subauriformis, longit. totius* $\frac{1}{3}$ *æquans; peristoma leviter incrassatum, anguste reflexum, margine columellari dilatato, reflexo, intus oblique subtorto, dextro arcuato.*

Longit. 16 *millim., diam.* 6; *apertura* 5 *longa,* $3\frac{2}{3}$ *lata.*

Hab. Mayotte (*ex coll. Emile Eudel*).

This species is more elongate than most of the forms of *Edentulina* and bears a general resemblance to *Elma swinhoei* of H. Adams.

Fig. 2.

Ennea (*Edentula*) *longula.*

The outer lip, however, is not deeply sinuated as in that section of the genus *Ennea*.

The types of this and the preceding species have been presented to the British Museum by Mr. H. Fulton.

5. On two Collections of Lepidoptera sent by H. H. Johnston, Esq., C.B., from British Central Africa. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

[Received September 20, 1893.]

(Plate LX.)

The collections, of which the following is an account, were made by Mr. R. Crawshay and Mr. A. Whyte respectively; the first principally at Lake Mweru in 1891 and 1892, the second at Zomba between July 1892 and January 1893. Of the two series the former is in by far the better condition, and the latter considerably more numerous both in species and individuals. So many of the species in the two series are identical that I have thought it better to combine them in one paper: together they represent no less than 216 species, the majority of which belong to the South African fauna. Thirty-one species are described as new to science.

Rhopalocera.

1. Amauris ochlea.

Danais ochlea, Boisduval, Voy. de Deleg. ii. p. 589 (1847).

Zomba, Jan. 1893.

2. Amauris lobengula.

Nebroda lobengula, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. vi. p. 346 (1890).

♂. Near to *A. albimaculata* of Natal, considerably larger and with the costal margin of the primaries comparatively longer (even more so than in *A. hanningtonii*); the spot in the cell much larger, the latter and the subquadrate spot at centre of the lower median interspace of a less pure white; the ochreous belt on the secondaries brighter and of fully double the width; submarginal spots nearly as in *A. echeria*. Expanse of wings 90 millim.

Zomba, July 1892.

Our largest male example of *A. albimaculata* measures 72 millim. in expanse.

3. Amauris whytei, sp. n.

♂ ♀. Near to *A. echeria*; larger, the primaries with white spots very slightly tinted with ochre and formed as in *A. hanningtonii*; the secondaries with the ochreous belt paler and duller, resembling the under-surface colouring in *A. echeria*, quite half as wide again as in that species, and with a less acutely angled outer edge: from the preceding species it differs in its inferior size, less produced primaries with yellower spots, the narrower, duller, and paler ochreous belt on the secondaries, and consequently broader black outer border. Expanse of wings 85 millim.

Zomba, December 1892.

I had hoped to find that this was the *A. steckeri* of Kheil, the label of which remained a blank in the collection; but, on looking up the description and figure, I find that *A. steckeri* is typical *A. echeria* and has been compared with *A. albimaculata* under the impression that the latter represented Stoll's species. *A. whytei* is nearer to *A. jacksoni*, E. M. Sharpe, but perfectly distinct.

4. Limnas chrysippus.

Papilio chrysippus, Linnæus, Mus. Lud. Ulr. p. 263 (1764).

♂ ♀, Zomba, July 1892; ♀, Lake Mweru.

4 *a*. Limnas klugii.

Limnas klugii, Butler, P. Z. S. 1885, p. 758, n. 2.

♀, Rhodesia, Lake Mweru, June 11, 1892.

4 *b*. Limnas dorippus.

Euplœa dorippus, Klug, Symb. Phys. pl. 48. figs. 1–4.

♀, Lake Mweru.

I did not find *L. alcippus* in the collection; but as *Hypolimnas*

alcippoides was in the Zomba series, it is only reasonable to suppose that *L. alcippus* also occurs there.

5. Melanitis solandra.

Papilio solandra, Fabricius, Syst. Ent. p. 500, n. 244 (1775).

Zomba, December 1892 and January 1893.

This is one of the forms of *M. leda* which is not found in India. As already stated, I think the Indian type is, to all intents and purposes, a species distinct from the rufescent form named by Linnæus: when two variable and allied species exhibit similarity *without identity* in one of their many sports, they must still be considered distinct.

6. Melanitis libya.

Melanitis libya, Distant, Ann. & Mag. Nat. Hist. ser. 5, vol. x. p. 405 (1882).

♀, Zomba, January 1893.

The colouring of the under surface evidently differs from that of the type; but, in a genus in which both the colouring and pattern of that surface vary indefinitely, this is unimportant.

7. Gnophodes diversa.

Gnophodes diversa, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. v. p. 333 (1880).

Zomba, July 1892.

8. Mycalesis (Monotrichtis) rhacotis.

Mycalesis rhacotis, Hewitson, Ex. Butt. iii., *Myc.* pl. 8. fig. 50 (1866).

Lake Mweru; Zomba, July 1892, January 1893.

9. Mycalesis (Monotrichtis) eusirus.

Mycalesis eusirus, Hopffer, Ber. Verh. Ak. Berl. 1855, p. 641, n. 13.

Lake Mweru; Zomba, July 1892, January 1893.

I think it doubtful whether this is more than a form of the preceding species, which, however, it would of course supersede if not distinct.

10. Mycalesis (Monotrichtis) miriam.

Papilio miriam, Fabricius, Ent. Syst. iii. 1, p. 242, n. 754 (1793).

Zomba, July and December 1892.

This species varies considerably in size and the greater or less regularity of the outer line of the central belt; examples from the West Coast of Africa in the Museum Collection show a more dentate-sinuate character in this line, especially on the primaries, than those in the present series; but in all other details they correspond.

11. Samanta perspicua.

Mycalesis perspicua, Trimen, Trans. Ent. Soc. London, 1873, p. 104, pl. 1. fig. 3.

Zomba, July 1892 and January 1893.

This species varies in depth of colour and in the width of the pale outer border to the central belt on the under surface; some examples incline to grey and others to ochreous on this surface.

Neocœnyra, Butl.

Mr. Trimen (P. Z. S. 1891, p. 62) sinks this genus as a synonym of *Pseudonympha*, Wllgr., stating that all the characters which I have given to distinguish it from *Cœnyra* are such as occur in *Pseudonympha*; he fails to notice that the palpi and antennæ correspond (as stated in my diagnosis) with those of *Cœnyra*. In *Pseudonympha*, on the other hand, the palpi are clothed with much longer hairs, and the antennæ have a flattened spatulate club. As regards the type (*N. duplex*), which Mr. Trimen sinks as a probable synonym of *Ypthima bera*, Hewits., it is not only not nearly allied to the latter, but it has a totally different appearance, all the red markings being entirely unrepresented in Hewitson's species. I quite agree with my friend in disliking imperfectly characterized genera; but when, after careful comparison with all allied genera, I find it necessary to found a new one, it somewhat surprises me to be informed that it is synonymous with one of the very genera mentioned in the original description as differing in structure.

12. Neocœnyra ypthimoides, sp. n.

Allied to *N. bera*, slightly larger and much darker, the deeper coloration being especially noticeable on the under surface: primaries above with the paler patch enclosing the ocellus extended to inner margin and confined throughout its length by a sinuated dusky postmedian line and a blackish feebly undulated submarginal line; a second small ocellus frequently present on the lower median interspace: in the secondaries the submarginal line is almost regular, not zigzag towards apex as in *N. bera*; the ocelli vary in number from five to six, that nearest the costa being either large, small, or absent, that on the lower radial interspace either small or absent, the two on the median interspaces largest, as in *N. bera*, and the two nearest anal angle small and confluent; the pale area enclosing the ocelli is bounded internally by a widely zigzag dusky postmedian line: markings below as above, but sometimes more sharply defined. Expanse of wings 40–48 millim.

Zomba, July and December 1892, January 1893.

This appears to be a common species, of which the collection contained a long series: I have compared eleven of them with Hewitson's four examples of *N. bera* and find the differences absolutely constant.

13. Ypthima itonia.

Ypthima itonia, Hewitson, Trans. Ent. Soc. ser. 3, vol. ii. p. 287, n. 11, pl. 18. fig. 13 (1865).

Zomba, December 1892 and January 1893.

The white areas below vary a little in intensity and the ocelli in size; but in other respects this species seems to be wonderfully constant.

14. Ypthima simplicia.

Ypthima simplicia, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 481 (1876).

Lake Mweru; Zomba, July and December 1892, January 1893.

15. Periplysia johnstoni, sp. n. (Plate LX. fig. 1.)

Wings above cream-coloured; the transverse striations of the under surface showing more or less distinctly through the wings: primaries with the swollen part of the subcostal vein ochreous; costal border to subcostal vein, an apical patch continuous with it and extending downwards to first median branch, outer border in the male, and a broad internal border regularly excised near the external angle, blackish; four or five more or less distinct blind black ocelli with orange irides in a straight line across the disk to second or first median branch, three regular parallel submarginal and marginal black stripes: secondaries with the costa and external border in the male broadly blackish, the latter partly enclosing a submarginal series of black spots; the three black stripes or lines as in the primaries, but more or less distinctly interlined with white (as in all the wings of the female); female with the costal area more or less smoky grey; a blackish diffused submarginal band, sometimes with excised external sinuations, enclosing a series of more or less distinct ocelli with dull orange irides. Body above black, below cream-coloured, with black striæ and three lines on outer border as above; a series of orange ocelli with metallic leaden pupils, five on the primaries and seven on the secondaries (the last two confluent); the central area in the male widely devoid of striation, but in the female the clear space is only represented by an ill-defined fusiform transverse patch or band bounding the ocelli internally. Expanse of wings 37–40 millim.

Zomba, January, July, and December 1892.

This pretty little species is evidently not uncommon; it is a link between *P. leda* and *P. panda*, the under surface of the female being very similar to that of the latter species, only with more sharply defined black striations.

16. Charaxes saturnus.

♂. *Charaxes saturnus*, Butler, P. Z. S. 1865, p. 624, n. 5, pl. 36. fig. 1; ♀. Lep. Exot. i. p. 5, pl. 2. fig. 2 (1869).

Sulim bin Najimb, Konde, Jan. 22, 1893 (*R. Crawshay*).

17. Charaxes jocaste.

♂. *Charaxes jocaste*, Butler, P. Z. S. 1865, p. 628, n. 21.

♀. *Charaxes achæmenes*, Felder, Reise der Nov., Lep. iii. p. 446, n. 729, pl. 59. figs. 6, 7 (1867).

Zomba, July 1892.

I do not see why the name *C. jocaste* should be ignored, since thousands of descriptions applicable to half a dozen species coming from the same locality are allowed to stand. My description characterized four species, of two of which the locality was established, one being from India and the other from Senegal; both species were well known under the names *C. fabius*, Fabr., and *C. jocaste*, Boisd., MS. In the absence of any other known African species, *C. jocaste* from Senegal was perfectly recognizable by my description; therefore it seems to me that, as a matter of fact, it was sufficiently characterized and the name *C. jocaste* (as a matter of principle) should supersede that of *C. achæmenes*. The object of a description is not to glorify the author of it, but to render a new species recognizable, and it is on this account that good figures of new species (when named), although unaccompanied by any description whatever, are recognized as claiming priority over subsequent descriptions of the same species. It is immaterial by what name a species is known, provided that the oldest name by which it was recognized is retained.

18. Charaxes guderiana.

♂. *Nymphalis guderiana*, Dewitz, Nova Acta Akad. Naturf. Halle, 1879, p. 200, pl. 2. fig. 18.

♂, December 1892; ♂ ♀, January 1893; ♂, Mipa Stream, Mofwi, August 3, 1892 (*R. C.*).

The female approaches that sex of *C. kirkii*, being crossed above by a buff band which on the primaries is broken up, above the first median branch, into two series of spots divergent on the costal area; the bluish-white discoidal spot of the male is also represented by a buff spot.

19. Charaxes alladinis.

♀. *Charaxes alladinis*, Butler, Cist. Ent. i. p. 5, n. 3 (1869); Lep. Exot. i. pl. 10. fig. 2 (1870).

♂. Above very near to *C. hollandii* (the Sierra Leone representative of *C. ethalion*), but in outline of wing even more quadrate than *C. ethalion* itself, the primaries having a much less arched outer margin and the secondaries being shorter. Above blue-black: primaries with the costa, basal fourth, apex, and outer margin bronze green; two subapical obliquely placed unequal greenish-white spots: secondaries with the costal area purplish brown, the abdominal area, including the greater part of the discoidal cell, clothed with brown hair; external area and veins greenish; a shining bronze-green lunulated stripe halfway between the cell and outer margin, only the last four sinuations

or lunules being well defined; a submarginal series of small blue spots edged internally with white; an irregular marginal border, the first three divisions of which are brick-red and the remainder golden-bronze, shading into white on centre of tails; extreme margin steel-black with scarcely perceptible white fringe. Below the usual markings prevail, but the ground-colour has the rufous character of that of the female. Expanse of wings 73 millim.

Ngama's, Kakoma, Aug. 5, 1892 (*R. C.*); Zomba, Jan. 1893.

20. Charaxes whytei, sp. n. (Plate LX. fig. 2.)

♂. Belongs to the *C. ethalion* group, but is very distinct, more nearly approaching *C. talaguga*, Holland, in pattern than any other species. Above blue-black, with a submarginal slightly sinuous series of seven greenish-grey spots, tapering from inner margin to last subcostal branch near the outer margin: secondaries with costa greyish; an opaline bluish-white belt changing in certain lights to grey or pale green, narrow at costa, gradually widening to third median branch, nearly of uniform width to just below first median branch, and then abruptly narrowed to inner margin; this belt leaves a rather narrow black outer border, enclosing a submarginal series of small white dashes, touched with blue near anal angle, and a marginal grey-greenish irregular stripe, streaked with dull golden buff and brick-red; extreme margin black. Body as usual; under surface having the usual character, somewhat reddish and sericeous, with a straight white transverse central band bounding the outer series of black lines forming the limit of the almost central belt, and which in this species are united into one almost unbroken line; the ordinary discal lunules united into an irregular, internally black-edged band of greenish, shading into clay-reddish. Expanse of wings 61 millim.

Zomba, December 1892 and January 1893.

21. Charaxes bohemani.

Charaxes bohemani, Felder, Wien. ent. Monatschr. 1859, p. 321, pl. 6. fig. 3.

Ngama's, August 5, 1892 (*R. C.*).

22. Charaxes pithodoris.

Charaxes pithodoris, Hewitson, Exot. Butt. v., *Charaxes*, pl. iv. figs. 18, 19 (1876).

Rhodesia, Lake Mweru, June 12, 1892.

23. Charaxes cithæron.

Charaxes cithæron, Felder, Wien. ent. Monatschr. iii. p. 308, pl. 8. figs. 2,3 (1859).

♀, Zomba, January 1893.

24. Charaxes tiridates.

Papilio tiridates, Fabricius, Sp. Ins. ii. p. 11, n. 43.

♂, Lake Mweru.

25. Charaxes neanthes.

Nymphalis neanthes, Hewitson, Exot. Butt., *Nymphalis*, pl. 1. figs. 2, 3 (1854).

♂, Lake Mweru.

26. Palla varanes.

Papilio varanes, Cramer, Pap. Exot. ii. pl. clx. D, E (1879).

Lake Mweru; Zomba, January 1893.

27. Hypolimnas misippus.

Papilio misippus, Linnæus, Mus. Lud. Ulr. p. 264 (1764).

♂, Zomba, January 1893; ♀, July 1892.

27 *a*. Hypolimnas alcippoides.

Hypolimnas alcippoides, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 102, n. 2 (1883).

♂ ♀, Zomba, July 1892; ♂, Lake Mweru.

27 *b*. Hypolimnas inaria.

Papilio inaria, Cramer, Pap. Exot. i. pl. ccxiv. A, B (1782).

♀, Lake Mweru.

The form *H. alcippoides* is generally smaller, and *H. inaria* larger, than the type form.

28. Panopea expansa.

Panopea expansa, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. ii. p. 177 (1878).

Lake Mweru.

The type of this species was received from Masasi.

29. Junonia artaxia.

Junonia artaxia, Hewitson, Exot. Butt. iii., *Jun.* pl. 1. fig. 6 (1864).

Zomba, July and December 1892, January 1893; Lake Mweru.

30. Junonia nachtigalii.

Precis nachtigalii, Dewitz, Nova Acta Akad. Naturf. Halle, 1879, p. 194, pl. 1. fig. 16.

Zomba, July 1892.

I can see no sufficient reason for distinguishing *Precis* from *Junonia*; the length of the palpi is a slightly variable character and, taken collectively, the difference in length between those of *Precis* as compared with *Junonia* appears to me extremely doubtful: as to the different form of wing, if strictly adhered to, that character would necessitate still further subdivision of the genus.

31. Junonia natalica.

Precis natalica, Felder, Wien. ent. Monatschr iv. p. 106, n. 65 (1860).

Zomba, July 1892, January 1893.

32. Junonia chapunga.

Junonia chapunga, Hewitson, Exot. Butt. iii., *Jun.* pl. 1. figs. 2, 3 (1864).

Zomba, January 1893.

Varieties also occur (taken in July 1892 and January 1893) which are intermediate in character between *J. chapunga* and *J. pelasgis*, the ocellated spots being united into an ochreous band and continuous with the short oblique band beyond the cell of primaries, which is also ochreous; Hewitson has an example of this variety in his series of *J. chapunga*.

33. Junonia ceryne.

Salamis ceryne, Boisduval, Voy. de Deleg. ii. p. 592 (1847).

♂, Lake Mweru; ♂ ♀, Zomba, January 1893.

34. Junonia galami.

Vanessa galami, Boisduval, Faun. Madag. p. 46 (1833).

Zomba, December 1892 and January 1893.

35. Junonia aurorina, sp. n. (Plate LX. fig. 3.)

Allied to *J. sinuata*, Plötz (=*serena*, Weymar), and very similar to both in pattern and in coloration, but the primaries almost of the same form as *J. galami*; the subapical angle is, however, a little more prominent, the outer margin less inarched, and the posterior angle less prominent: the secondaries are of the same form as in *J. sinuata*; below the central area is yellower and the outer borders washed with lilac. Expanse of wings, ♂ 57 millim., ♀ 60 millim.

Zomba, December 1892 and January 1893.

36. Junonia trimenii, sp. n. (Plate LX. fig. 4.)

Near to *J. micromera*, which it much resembles on the upper surface; it is, however, larger, and has a pinky-whitish diffused band in front of the series of black spots in the male; the central and double black band has two very acute angles, the black spots of the discal series are smaller, and the brown area at base of secondaries is restricted and followed by one or two black spots at the end of the cell; on the under surface all the dark markings on basal area are represented by irregular black spots quite clearly defined. Expanse of wings, ♂ 52 millim., ♀ 56 millim.

Zomba, July and December 1892, January 1893.

This appears to be a much commoner species than *J. micromera*, and is quite constant in all its characters.

37. Junonia micromera.

Junonia micromera, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 482 (1876).

Lake Mweru; Zomba, July and December 1892, January 1893.

38. Junonia calescens, sp. n.

Precis octavia, Staudinger, Exot. Schmett. pl. 38. fig. 4.

omba, July 1892.

This species is commonly regarded as a variety of *J. octavia*, but there is not a particle of evidence in support of this opinion; in the present collection it is common and constant enough to justify its separation from Cramer's species. It differs as follows:— It is considerably larger (60–65 millim. in expanse), is of a bright rosy red colour, paler in the centre of the disk; all the black markings are less heavy in character, the bar at end of cell in primaries isolated, whereas in *J. octavia* it forms part of a broader and angular band which crosses the wing, and the marginal lunules on the under surface are bluish, instead of chalk-white. It is a constant local representative of *C. octavia*, which does not occur in the present collection.

39. Junonia elgiva.

Junonia elgiva, Hewitson, Exot. Butt. iii., *Jun.* pl. 1. fig. 1 (1864).

Lake Mweru; Zomba, December 1892 and January 1893.

40. Junonia cuama.

Junonia cuama, Hewitson, Exot. Butt. iii., *Jun.* pl. 1. figs. 4, 5 (1864).

Zomba, December 1892.

41. Junonia cloantha.

Papilio cloantha, Cramer, Pap. Exot. iv. pl. cccxxxviii. A, B (1782).

Lake Mweru; Zomba, December 1892.

42. Junonia actia.

Precis actia, Distant, P. Z. S. 1880, p. 185, pl. 19. fig. 7.

Lake Mweru.

43. Junonia sesamus.

Precis sesamus, Trimen, South Afr. Butt. i. p. 231, pl. iv. fig. 3 (1887).

Lake Mweru.

44. Junonia boöpis.

Junonia boöpis, Trimen, Trans. Ent. Soc. London, 1879, p. 331.

♂ ♀, Rhodesia, Lake Mweru, June 12, 1892.

45. Junonia clelia.

Papilio clelia, Cramer, Pap. Exot. i. pl. xxi. E, F (1779).

Lake Mweru; Zomba, January 1893.

46. Junonia cebrene.

Junonia cebrene, Trimen, Trans. Ent. Soc. London, 1870, p. 353.

Lake Mweru; Zomba, December 1892 and January 1893.

47. Pyrameis cardui.

Papilio cardui, Linnæus, Faun. Suec. p. 276, n. 1054 (1761).

Lake Mweru.

48. Protogoniomorpha definita.

♂. *Salamis definita*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. iv. p. 230 (1879).

♀. Like a white form of *P. nebulosa*, but with the base of the wings above grey. Expanse of wings 76 millim.

Zomba, January 1893.

The male was described from Madagascar: we must therefore conclude either that three wide-ranging allied species exist, or that they represent one widely distributed and very variable species; the latter seems to me the more probable solution of the difficulty. In this case the present species would stand as *P. aglatonice*, Godt. (specimens of which we have received previously from Central Africa), and as var. *definita* ♀; *P. nebulosa* would also have to be ranked as an extreme form of the same species.

49. Protogoniomorpha anacardii.

Papilio anacardii, Linnæus, Mus. Lud. Ulr. p. 236 (1764).

Zomba, July 1892.

50. Cymothoe theobene.

Harma theobene, Doubleday, Westwood & Hewitson, Gen. Diurn. Lep. i. pl. 40. fig. 3 (1850).

Lake Mweru.

51. Hamanumida dædalus.

Papilio dædalus, Fabricius, Syst. Ent. p. 482, n. 174 (1775).

Lake Mweru; Zomba, July 1892.

52. Neptis agatha.

Papilio agatha, Cramer, Pap. Exot. iv. pl. cccxxvii. A, B (1782).

Lake Mweru; Zomba, July 1892.

53. Atella columbina.

Papilio columbina, Cramer, Pap. Exot. iii. pl. ccxxxviii. A, B, iv. pl. cccxxxvii. D, E (1782).

Zomba, December 1892 and January 1893.

54. Crenis natalensis.

Crenis natalensis, Boisduval, Voy. de Deleg. ii. p. 592 (1847).

Zomba, January 1893.

The single example is rather darker than the specimens in the Museum series, but differs in no other respect.

55. Crenis crawshayi, sp. n. (Plate LX. fig. 5.)

Greyish blue, the whole centre suffused with rosy lavender; the base and costa of primaries, and the body above, slightly greenish; wings with slightly sinuated black outer margins and delicate white fringes; veins black externally; disk of wings crossed by three series of black spots beyond the middle, the innermost series angulated and very oblique on the primaries, almost obliterated on the secondaries, the first two spots of the series cuneiform, the others rounded; second series double towards costa, the first three spots being preceded by elongate blackish streaks; a minute white dash between the first pair, which would otherwise be lost in the black veins, of which they form a mere thickening; the spot on interno-median area divided; submarginal series formed of more or less lunate spots; costa of secondaries and hairs on abdominal area somewhat brownish. Underside most like that of *C. rosa*, but deeper in colour, the primaries with two complete series of black spots towards outer margin, the first of the inner series and the first two of the outer series enclosed by a pale silvery blue apical costal streak, the three following pairs united by longitudinal streaks of the same colour, the fourth pair by a few blue scales; all the spots of the outer series united to pale blue marginal spots; extreme margin blackish, with white fringe: secondaries having the general aspect of those of *C. rosa*, but entirely different in details; costa broadly pale blue, with a black interrupted longitudinal line above the costal vein; a black spot below it at centre of costa and a cuneiform orange spot enclosing the precostal veinlet; a broad almost triangular blue patch nearly covering the cell, within which are black irregular characters similar to those of *Argynnis* or *Euthalia*; a blue streak runs down the abdominal border, and a second, enclosing the submedian vein, unites with it to form a large anal patch, which encloses a slender black submarginal line and the last two spots of the discal series; from the submedian streak a curved series of triangular blue spots, terminating externally in blackish angular markings, runs across to the cell, with the large patch on which the triangular spots are fused; two series of black spots parallel to the outer margin enclosed in clavate longitudinal pale blue streaks, the outer series submarginal. Body below bluish white. Expanse of wings 65 millim.

Lake Mweru.

A strikingly distinct new species.

56. Eurytela dryope.

Papilio dryope, Cramer, Pap. Exot. i. pl. lxxviii. E, F (1779).

Zomba, January 1893.

57. Hypanis acheloia.

Hypanis acheloia, Wallengren, Lep. Rhop. Caffr. p. 29 (1857).

Rhodesia, Lake Mweru, June 11, 1892; Zomba, July and December 1892.

58. Acræa vinidia.

Acræa vinidia, Hewitson, Ent. Mo. Mag. xi. p. 130 (1874); Exot. Butt. v., *Acræa*, pl. 7. figs. 45, 46 (1875).

Rhodesia, Lake Mweru, June 12, 1892.

59. Acræa cabira.

Acræa cabira, Hopffer, Ber. Verh. Akad. Berlin, 1855, p. 640, n. 7; Peters's Reise nach Mossambique, p. 378, pl. 23. figs. 14, 15 (1862).

Zomba, July 1892, January 1893.

60. Acræa excelsior.

Acræa excelsior, E. M. Sharpe, P. Z. S. 1891, p. 192, pl. xvii. fig. 3.

♀, Zomba, January 1893.

61. Acræa ventura.

Acræa ventura, Hewitson, Ent. Mo. Mag. xiv. p. 51 (1877).

♀. Above quite like a large reddish female of *A. eponina*[1]; primaries below with wider and comparatively paler apical area: the secondaries with three large vermilion spots in the macular central angulated band; the markings of the external border somewhat as in *A. cabira*, but only outlined in black, the zigzag line having much larger marginal triangular spots. Expanse of wings 60 millim.

Zomba, July 1892.

62. Acræa terpsichore.

Papilio terpsichore, Linnæus, Mus. Lud. Ulr. p. 222 (1764).

Papilio eponina ♀, Cramer, Pap. Exot. iii. pl. cclxviii. C, D (1782).

Zomba, July 1892.

My view (Fabr. Cat. p. 133) that *P. terpsichore* was *Acræa*

[1] According to Dr. Holland, who has gone carefully into the synonymy of the *A. serena* group (Ann. & Mag. N. H., October 1893), this is the typical *A. bonasia* of Fabricius, and Cramer's female the same as *A. serena*, Fabr. The only difficulty is that, in the absence of the Fabrician type of *A. serena*, his description is insufficient for the certain identification of the species, the only clue being "Parvus, affinis Terpsichori." In looking up the description of *P. terpsichore*, Linn., I find a reference to a figure by Petiver, which is clearly a bad representation of *Acræa violæ*; the Linnæan description "Apices fusci lunula in medio" corresponds much better with Cramer's female of *A. eponina*, which I believe to be *A. terpsichore*, Linn. Aurivillius, in his important paper on the species described by Linnæus, says: "fortasse ad *Acræa serena*, Fabr., optime referri posset, nisi alæ posticæ saturatiores essent."

horta is rightly opposed by Aurivillius; his hesitation to regard it as *A. serena*, Fabr., = *eponina* ♀, Cramer, seems to be based solely on the words "posticis saturatioribus," and is, I think, hypercritical: the question as to whether *A. serena* is the insect which it is generally supposed to be, in the absence of any mention by Fabricius of the oblique spot on the black at apex, is, I think, far more doubtful. My remark (*loc. cit.*) that the Linnæan description "is applicable to *A. rahira* ♀" appears on more mature reflection to be untenable.

63. Acræa perrupta.

Telchinia perrupta, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 102, n. 4 (1883).

Lake Mweru; Zomba, July 1892.

64. Acræa lycia.

Papilio lycia, Fabricius, Syst. Ent. p. 464, n. 94 (1775).

Lake Mweru.

A. adrasta, Weymar (Stett. ent. Zeit. 1892, p. 85), is the allied *A. cæcilia*.

65. Acræa doubledayi.

Acræa doubledayi, Guérin, Lefebvre's Voy. en Abyss. vi. p. 378 (1847).

Acræa oncæa, Hopffer, Peters's Reise, v. pl. 24. figs. 5–8 (1862).

♀, Lake Mweru; ♂ ♀, Zomba, July 1892.

I believe *A. abadina*, Ribbe, to be this species.

66. Acræa empusa, sp. n. (? local race of *A. asema*, Hewits.)

Allied to *A. doubledayi*, with the aspect of *A. punctatissima*. Sexes nearly alike, semitransparent, tawny; the primaries greyer than the secondaries, with diffused black apical patch; the spots nearly as in *A. doubledayi*, but the primaries with three additional spots in an oblique series below apex; secondaries with marginal tawny spots on the black border. Primaries below with three more or less distinct yellowish-white apical marginal spots on a diffused grey apical nebula; four spots instead of three in the oblique series beyond the cell; no white subapical band in the female, the three additional black spots as above: secondaries with the black spots wider apart, larger and less numerous; rose-colour and spots at base similar, no spot on upper radial interspace, the dot at base of lower radial interspace wanting, and the large spot placed nearer to the base; only one spot on abdominal margin. Expanse of wings, ♂ 46 millim., ♀ 47 millim.

Zomba, July 1892.

One crippled male example has an expanse of 50 millim.

A similar but distinct species is described by Rogenhofer under the name of *A. marnois*.

67. Acræa periphanes.

Acræa periphanes, Oberthür, Études d'Entom. livr. xvii. p. 20, pl. 2. fig. 23 (1893).

One example, Lake Mweru.

Our example is better marked than that of M. Oberthür, all the spots of the under surface of primaries being strongly defined on the upper surface; the secondaries below more distinctly marked with rosy vermilion on abdominal border, where there is one additional black spot. There can be no question whatever that these differences are due to simple individual variation.

In the same livraison M. Oberthür has described a number of species as new upon which Dr. Holland has recently commented in his paper in the 'Annals of Natural History.' I quite agree with him in his statement that all the varieties of *A. proteina* and *A. kilimandjara* are sports of *A. johnstoni*, Godman. I also consider *A. cappadox* to be=*A. bonasia*, *A. strattipocles* ♂ = *sambavæ*, Ward; *A. conradti*=probably a variety of *A. fornax*, Butl.; *A. serena-melas* a melanism of *A. bonasia*; *A. chæribula*= n. sp. near to *A. caldarena*; *A. masaris* ♀ =*A. monteironis*, Butl. *A. regalis* is allied to, but distinct from, *A. bræsia*, Godm. We have the species represented in the Museum collection.

Of other *Acræas* recently described to which attention should be drawn are *A. albomaculata*, Weymar, Stett. ent. Zeit. 1892, p. 82, which is=*A. ligus*, Druce, and *A. ombria*, Weymar, *l. c.*, which is =*A. caldarena*, Hew.

68. Acræa caldarena.

Acræa caldarena, Hewitson, Ent. Mo. Mag. xiv. p. 52 (1877).

Acræa nelusca, Oberthür, Études, livr. iii. p. 25, pl. 2. figs. 2, 3 (1878).

Acræa amphimalla, Westwood in Oates's 'Matabele-Land,' pl. E. figs. 1, 2 (1881).

Acræa ombria, Weymar, Stett. ent. Zeit. 1892, p. 82.

♂ ♀, Zomba, July 1892; ♂, Lake Mweru.

I cannot agree with Trimen in referring *A. nelusca* to *A. doubledayi*: in the first place the male, although with a slightly smaller black apical patch than usual to the primaries, also lacks the longitudinal grey streaks on the internervular folds, which are very characteristic of *A. doubledayi* ♂; the female, moreover, is quite typical, and, as Trimen says, in it "there is no trace whatever of the subapical whitish bar of *doubledayi* ♀." In the present collection one female corresponds with Oberthür's figure, whilst another is smoky grey, with the central third of the primaries occupied by a broad oblique snow-white belt.

69. Acræa acrita.

Acræa acrita, Hewitson, Exot. Butt. iii., *Acr.* pl. 3. fig. 18 (1865).

♂, Lake Mweru.

70. Acræa guillemei.

♂. *Acræa guillemei*, Oberthür, Études, livr. xvii. p. 19, pl. 1. fig. 1 (1893).

♀. Smoky grey, with black borders and spots as in the male.

Zomba, July 1892 and January 1893.

This species, with its dusky female, is rather strikingly distinct; it does not appear to be rare.

71. Acræa natalica.

Acræa natalica, Boisduval, Voy. de Deleg. p. 590, n. 57 (1847).

♂ ♀, Zomba, July 1892; Lake Mweru.

72. Acræa arcticincta.

Acræa arcticincta, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 103 (1883).

Acræa anemosa, Staudinger, Exot. Schmett. pl. 33. fig. 1.

Zomba, July 1892.

As I pointed out in my description, the black border of the secondaries in this *Acræa* is only half the width of that in *A. anemosa*; the black oblique streak at the end of the cell of primaries is also narrower; it is a well-marked representative form, between which and the species named by Hewitson I have seen no links.

73. Acræa areca.

Acræa areca, Mabille, Bull. Soc. Ent. France, 1888; Nov. Lep. p. 100, pl. xiv. p. 5 (1893).

Acræa khara, Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 128 (1889); Rhop. Exot., *Acr.* pl. 2. figs. 1, 2 (1889).

♂, Zomba, July 1892; ♀, December 1892.

The female has a pale subapical white patch immediately beyond the black oblique bar after end of cell of primaries.

74. Acræa acara.

Acræa acara, Hewitson, Exot. Butt. iii., *Acr.* pl. 3. figs. 19, 20 (1865).

♀. Var. *Acræa pseudolycia*, Butler, Cist. Ent. i. p. 213 (1874).

♂ ♀, Zomba, July 1892.

A. pseudolycia is a rare albino form of the female.

75. Planema johnstoni.

♂. *Acræa johnstoni*, Godman, P. Z. S. 1885, p. 537.

♀. *Acræa* (*Planema*) *johnstoni*, Butler, P. Z. S. 1888, p. 91.

♀ ♀, Zomba, December 1892 and January 1893.

As already stated, Dr. Holland has given the full synonymy of this species, which is more variable in colouring than any other *Planema*. I have seen examples in various collections corr sponding with most of those figured by M. Oberthür.

76. Alæna nyassa.

Alæna nyassa, Hewitson, Ent. Mo. Mag. xiv. p. 6 (1877).

♀. *Alæna major*, Oberthür, Études, livr. xii. p. 7, pl. 2. fig. 5 (1888).

Zomba, December 1892 and January 1893.

It is a singular thing that, at the time when M. Oberthür described and figured his *A. hauttecœuri* and *A. major* and made the observation,—" Jusqu'à présent on ne connaissait d'autre espèce du genre *Alæna* que l'*Amazoula*, Bdv., de Natal,"—one of these species had already been described eleven years, as *A. nyassa*, and the other five years, as *A. interposita*: one does not wish to be severe, but it looks almost as though this author had not gone over his 'Zoological Records' with any great care.

76 *a*. Alæna nyassa, var. ochracea.

Similar in pattern to the type, but the belt across the centre of the wings buff-coloured in the male and wider than in the typical form; that of the female cream-coloured, wider on costa than in the typical female, and less inarched; wings below suffused with buff. Expanse of wings, ♂ 31–36 millim, ♀ 35–36 millim.

Zomba, December 1892 and January 1893.

It is just possible that this may prove to be distinct from *A. nyassa*, but I am rather inclined to believe it to be a dimorphic form corresponding with the ochreous male of *A. interposita*, figured by M. Oberthür as the male of his *A. hauttecœuri*.

77. Alæna amazoula.

Alæna amazoula, Boisduval, Voy. de Deleg. ii. p. 591 (1849).

Zomba, July 1892.

78. Tingra amenaida.

Pentila amenaida, Hewitson, Exot. Butt. v., *Pent.* & *Lipt.* pl. 2. figs. 4–7 (1873).

Zomba, July 1892.

Var. Base of primaries dusky; secondaries smoky brown, with black spots and borders as usual.

Zomba, July and December 1892.

79. Lachnocnema bibulus.

Hesperia bibulus, Fabricius, Ent. Syst. iii. 1, p. 307, n. 163 (1793).

Zomba, July and December 1892.

This species varies considerably in size.

80. Hyreus lingeus.

Papilio lingeus, Cramer, Pap. Exot. iv. pl. cccl xxix. F, G (1782).

Zomba, July 1892.

81. Zizera gaika.

Lycæna gaika, Trimen, Trans. Ent. Soc. ser. 3, vol. i. p. 403 (1862).

Zomba, July 1892.

82. Lycænesthes bubastus.

Papilio bubastus, Cramer, Pap. Exot. iv. pl. cccIxii. G, H (1782).

Zomba, July 1892.

83. Lycænesthes adherbal?

♀. *Lycæna adherbal*, Mabille, Bull. Soc. Zool. France 1877, p. 217.

Zomba, July and December 1892.

This species is nearest to *L. princeps*, Butl.; the description is imperfect, having been made from a damaged female example; there can therefore be no absolute certainty in its identification excepting by a comparison with the type. The male of the species before me is less brilliantly coloured than the female: shining lavender blue above; the apical area and outer border of primaries dark brown, as also the costal area and sometimes a marginal border on the secondaries; the orange-zoned ocelli are slightly smaller than in the female.

84. Catochrysops osiris.

Lycæna osiris, Hopffer, Ber. Verh. Ak. Berlin, 1885, p. 642, n. 21; Peters's Reise nach Mossamb. v. p. 409, pl. 26. figs. 11, 12 (1862).

Zomba, July 1892 and January 1893.

85. Catochrysops asopus.

Lycæna asopus, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642, n. 22; Peters's Reise nach Mossamb. v. p. 410, pl. 26. figs. 13–15 (1862).

Zomba, July 1892.

86. Castalius hypoleucus, sp. n.

♂. Pale smoky grey, with darker veins and undulated submarginal line: primaries with transverse narrow dusky discocellular bar; an arched or angulated discal series of spots showing through the wing; a blackish marginal line: secondaries with discoidal and discal spots visible through the wing; a marginal series of ocelloid spots, bounded internally by the undulated line; the last but one distinct, blackish, crossed by a few bluish scales; the last or subanal ocellus double, sometimes blackish, but not invariably; all the others indistinct; margin black, preceded near anal angle by a slender white line; body blackish. Under surface chalky or creamy white, with greyish veins; a slender marginal black line, fringe brown, tipped with white: primaries with a short black bar on the discocellulars, an arched or angulated series of five brown or black spots across the disk from fourth subcostal to first

median branch; a submarginal series of almost confluent olive-brown dashes; secondaries with three rounded black equidistant spots across the basal area, a black discocellular bar and a double arched series of eight black spots across the disk; a submarginal undulated line, the first four divisions of which are olive-brown and the remainder saffron-yellow; beyond this line is a series of more or less defined pale yellow spots, succeeded near anal angle by a single black spot crossed by a metallic blue crescent, a double black spot sprinkled with metallic blue scales, and a black dot in the angle itself; body below white. Expanse of wings 40–43 millim.

♀. Larger than the male, the basal area sometimes to beyond the middle suffused with lilac; a large black spot at the end of the discoidal cell of primaries; primaries below with an additional black discal spot; in other respects like the male excepting that the female from Zomba has the discocellular bar and the spots at centre of discal series on the secondaries well-defined in black on the upper surface. Expanse of wings 47–54 millim.

♂ ♂, Forests of Tiveta and Wasin in coll. B.M. ♀ ♀, Victoria Nyanza and Zomba; the former in the Museum, the latter in the present series.

I have long hesitated to describe this very distinct species on account of the more or less damaged condition of all the specimens, and I had hoped Mr. Grose Smith would long since have relieved me from the necessity of doing so, but this I cannot discover that he has done. The species appears to me to come nearest to *C. azureus* from Madagascar, of which it is possible that *C. leucon*, Mab., may be the female, in spite of the extraordinary difference of pattern on the under surface of the primaries.

87. Azanus natalensis.

Lycæna natalensis, Trimen, South Afr. Butt. ii. p. 77, n. 158 (1887).

Zomba, July 1892.

88. Tarucus pulcher.

Lycæna pulchra, Murray, Trans. Ent. Soc. 1874, p. 524, pl. 10. figs. 7, 8.

Zomba, July and December 1892, January 1893.

89. Tatura philippus.

Hesperia philippus, Fabricius, Ent. Syst. iii. 1, p. 283, n. 87 (1793).

♀, Zomba, January 1893.

90. Tatura cæculus.

Iolaus cæculus, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642, n. 17; Peters's Reise nach Mossamb. v. p. 402, pl. 25. figs. 12–14 (1862).

♀, Zomba, January 1893.

91. Virachola anta.

Lycæna anta, Trimen, Trans. Ent. Soc. ser. 3, vol. i. p. 402 (1862).

♂, Zomba, December 1892 and January 1893.

92. Spindasis nyassæ.

Aphnæus nyassæ, Butler, Ent. Mo. Mag. xx. p. 250 (1884).

♀, Zomba, December 1892.

A much damaged example, but corresponding exactly in under-surface pattern with the male.

93. Spindasis homeyeri.

Aphnæus homeyeri, Dewitz, Deutsche ent. Zeitschr. xxx. p. 429, pl. 2. figs. 5 *a–c* (1886).

Zomba, December 1892.

In the plate the coloration of the upper surface is a little too florid; in fact, the upper surface is not unlike that of *Spindasis natalensis*; the pattern of the under surface at once fixes the species.

94. Axiocerses amanga.

Zeritis amanga, Westwood in Oates's 'Matabele-Land,' p. 351, n. 62 (1881).

Lake Mweru; Zomba, July 1892.

95. Axiocerses harpax.

Papilio harpax, Fabricius, Syst. Ent. App. p. 829, n. 327–8 (1775).

Lake Mweru; Zomba, July 1892 and January 1893.

96. Axiocerses perion.

Papilia perion, Cramer, Pap. Exot. iv. pl. cclxxix. B, C (1782).

Zomba, July and December 1892.

It appears to me that Hübner has as much claim to the genus *Axiocerses* as Felder has to the majority of the genera indicated by him in the 'Reise der Novara.'

97. Mylothris agathina.

Papilio agathina, Cramer, Pap. Exot. iii. pl. ccxxxvii. D, E (1782).

♂ ♀, Lake Mweru; ♀, Zomba, December 1892 and January 1893.

As I have explained elsewhere, the genus *Mylothris* is readily separable from *Belenois*, not only by its slightly longer wings, but as having only four branches to the subcostal vein of primaries. When describing *Belenois welwitschii*, Herr Rogenhofer recognizes the fact, mentioning "die gegabelte Apicalader" as a distinguishing character of the genus *Belenois*; nevertheless, in the same paper (Ann. Nat. Hofmuseums, Wien, 1889, pl. xxiii.), he has figured *Belenois ianthe* under the new name of *Mylothris agylla*, Rgh., and *Phrissura phaola* as also a *Mylothris*. His *B. welwitschii* comes

near to *B. calypso* and might almost be a hybrid between that species and *B. sabrata=thysa*, var.; the description is based upon two examples, both of them males.

98. Mylothris rüppelli.

Pieris rüppellii, Koch, Indo-Austr. Lep. Fauna, p. 88 (1865).

♀, Zomba, January 1893.

99. Nychitona alcesta.

Papilio alcesta, Cramer, Pap. Exot. iv. pl. cccl xxix. A (1782).

Lake Mweru.

100. Colias edusa.

Papilio edusa, Fabricius, Mant. Ins. ii. p. 23, n. 240 (1787).

♀, Zomba, December 1892.

101. Terias zoe.

Terias zoe, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 640, n. 5; Peters's Reise nach Mossamb. v. p. 369, pl. 23. figs. 10, 11 (1862).

♀, Zomba, January 1893.

102. Terias regularis.

Terias regularis, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 486 (1876).

♂ ♀, Zomba, July and December 1892.

103. Terias orientis.

Terias orientis, Butler, P. Z. S. 1888, p. 71, n. 87.

Terias butleri, Trimen, Afr. Butt. iii. p. 23, n. 244 (1889).

♂, Lake Mweru; ♀, Zomba, July 1892.

I had suspected the identity of *T. orientis* and *T. butleri* ever since reading the description of the latter, and in 1891 Mr. C. Barker kindly gave us a typical example of *T. butleri* from Palapye, Kama's country, Mashonaland, enabling me to prove the fact beyond question.

104. Teracolus rhodesinus, sp. n. (Plate LX. fig. 6.)

♂. Intermediate in character between *T. vesta* and *T. catochrysops*. Upper surface creamy buff, with white basal third and blue-grey basal scaling: primaries with slender black costal margin; discocellular spot large and black as in *T. mutans*; the external border nearly as in *T. doubledayi*, only the veins are not black beyond the bisinuated inner band of the black-brown external area: secondaries with the inner band or edging of the external area very narrow and almost obliterated below the third median branch, the outer border also narrow as in *T. doubledayi*, but more sharply defined; the enclosed spots consequently are longer than usual. Below like *T. vesta*, but the primaries with the bisinuated 3-band narrower and the secondaries of a more lively sulphur-yellow tint,

with saffron-yellow veins on basal area. Expanse of wings 45 millim.

Rhodesia, Lake Mweru, October 17, 1892.

105. Teracolus phlegyas.

Anthocharis phlegyas, Butler, P. Z. S. 1865, p. 431, pl. 25. figs. 3, 3*a* (1865).

♂, Salim bin Najimb, Konde, January 18, 1893 (*R. C.*).

106. Teracolus anax.

Callosune anax, H. Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 125 (1889); Rhop. Exot. i., *Call.* pl. 1. figs. 5–8 (1889).

♀, Lake Mweru.

107. Teracolus theogone.

Anthocharis theogone, Boisduval, Sp. Gén. Lép. i. p. 575, n. 23 (1836).

♂ ♀, Lake Mweru.

108. Teracolus subvenosus.

Teracolus subvenosus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105, n. 10 (1883).

♂, Zomba, July 1892.

109. Teracolus omphale.

Pieris omphale, Godart, Enc. Méth. ix. p. 122, n. 12 (1819).

♂, Lake Mweru.

110. Catopsilia florella.

Papilio florella, Fabricius, Syst. Ent. p. 479, n. 159 (1775).

♀, Zomba, July 1892.

111. Catopsilia pyrene.

Colias pyrene, Swainson, Zool. Ill. i. pl. 51 (1820–21).

♂ ♀, Zomba, July and December 1892.

112. Belenois severina.

Papilio severina, Cramer, Pap. Exot. iv. pl. cccxxxviii. G, H (1782).

♀, Rhodesia, Lake Mweru, June 13, 1892.

113. Belenois agrippina.

Pieris agrippina, Felder, Reise der Nov., Lep. ii. p. 173, n. 159 (1865).

♂, Lake Mweru; ♀, Zomba, July 1892.

Personally I have no doubt that Felder's *Pieris agrippina* is the large African representative of *B. mesentina*, with blackish-brown veins on under surface of secondaries. My friend Trimen's attempt to convince us that it is a varietal form of *B. severina* seems to me to be a work of supererogation: we have an abundant

African species, which agrees with Felder's description closely enough (I should have imagined) to satisfy anyone; but, probably because the base of the front wings on the under surface is said to be tinted with sulphur (a character only faintly indicated at the base of the costal border in the males), it is regarded as a variety of *B. severina*. Felder, comparing his *Pieris agrippina* with the latter species, rightly observes that it has the costal margins of the wings longer and the cells longer and narrower; he also notes that the white spots on the black apical area of the primaries are tolerably large, the inner edge of the outer border of the secondaries squamose, and the veins on the under surface of the same wings violaceous brownish, none of which characters are found in typical *B. severina*, nor have I ever met with a variety of that species possessing them. *B. lordaca* is, as Trimen observes, doubtless the same species as *B. mesentina*; but as to *B. auriginea* being the spring brood, Col. Yerbury's collection rather tended to show that it prevailed in the autumn, if I remember rightly.

114. Belenois gidica.

Pieris gidica, Godart, Enc. Méth. ix. p. 131, n. 37 (1819).

♀, Lake Mweru.

115. Belenois crawshayi, sp. n.

♂. Allied to *B. zochalia*. Above greenish white: primaries with silvery sericeous base; costal margin slenderly edged with black; the external border formed as in *B. calypso*, but rather more decided and without the apical white streak between the first and second spots; the five spots which remain quite white, the first, third, and fifth small and sagittate, the second larger and pyriform, the fourth minute and squamose; a very conspicuous black spot on the lower discocellular veinlet: secondaries with well-defined marginal black spots. Primaries below with the apical area pale sulphur-yellow, crossed by olive-brown veins and edged internally from costa to lower radial vein by an irregular narrow band of the same colour, below this by a grey lunule which connects it with a triangular black spot on second median interspace; black discocellular spot as above: secondaries creamy sulphur, with basal third of costal margin and a short interno-median basal streak of saffron- or cadmium-yellow; the veins, a forked marking in the cell, an oblique bar on the lower discocellulars, two or three squamose streaks across the base of the interno-median and first median areas, a partly disconnected zigzag submarginal stripe, and a series of broadly triangular marginal spots pale olive-brown; fringe white, spotted with grey and tipped with black at the extremities of the median branches: body below creamy whitish, the palpi pure white. Expanse of wings 63 millim.

Lake Mweru.

We have two males of this species in the Museum from Lake Tanganyika.

116. Belenois diminuta, sp. n. (Plate LX. fig. 7.)

♀. Allied to the preceding species; considerably smaller; the white spots on apical area enlarged, almost confluent, so as to divide it into an inner irregular oblique black band; a quadrate black spot on second median interspace and a dentated grey-brown external border, widest at apex; the black discocellular spot rather smaller than in *B. crawshayi* and the silvery basal area of wider extent: secondaries immaculate, the fringe slightly brownish: apical area below testaceous, the oblique band and quadrate spot of the upper surface represented in brownish grey, but the outer border obliterated: secondaries dull creamy stramineous, whiter on the veins; a faintly indicated testaceous spot on the lower discocellular and two or three very indistinct testaceous Λ-shaped markings representing the submarginal line of the preceding species. Expanse of wings 50 millim.

Lake Mweru.

I should have preferred to regard *B. diminuta* as the female of *B. crawshayi*, but females in this genus are usually as large as or larger than males and always have better defined markings; that there should be a solitary exception to this rule seems in the highest degree improbable.

117. Herpænia eriphia.

Pieris eriphia, Godart, Enc. Méth. ix. p. 157, n. 134 (1819).

Rhodesia, Lake Mweru, June 12, 1892.

118. Glutophrissa saba.

Papilio saba, Fabricius, Spec. Ins. ii. p. 46, n. 199 (1781).

♂ ♀, Lake Mweru.

119. Nepheronia thalassina.

Pieris thalassina, Boisduval, Sp. Gén. i. p. 443, n. 8 (1836).

♂, Lake Mweru.

120. Eronia leda.

Eronia leda, Doubleday, Gen. Diurn. Lep. i. p. 65 (1847).

♂, Lake Mweru.

121. Eronia cleodora.

Eronia cleodora, Hübner, Samml. exot. Schmett. ii. pl. 130 (1816–36).

Lake Mweru.

Herr Weymar (Stett. ent. Zeit. 1892) has redescribed my *E. dilatata* under the name of *E. cleodora*, var. *marginata*.

122. Papilio lurlinus.

Papilio lurlinus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 106, n. 12 (1883).

Mipa stream, Mofwi, August 3, 1892 (*R. C.*).

The type of this species was received from the Victoria Nyanza.

123. Papilio leonidas.

Papilio leonidas, Fabricius, Ent. Syst. iii. 1, p. 35, n. 103 (1793).

Zomba, December 1892.

124. Papilio corinneus.

Papilio corinneus, Bertoloni, Mem. Acc. Bologna, 1849, p. 9, pl. 1. figs. 1–3.

Zomba, July 1892.

125. Papilio nivinox, sp. n.

Black-brown, with semitransparent snow-white markings above; general character of markings similar to those of *P. corinneus*, excepting that the large spot near the end of the cell and the small one beyond it are so much enlarged that an oblique black line alone divides them, that the oval spot above the third median branch is lengthened and widened so as to form an oblique belt with the above-mentioned discoidal spots, from which it is only separated by the black median vein; that the large patch in the lower (first) median interspace is represented by a large or small oval patch occupying the centre af the interspace; the two subapical spots are rounded and well separated, and, as already mentioned, all the white markings are snow-white, whereas in *P. corinneus* they are greenish white: on the under surface the crimson in the cell is deeper and only occupies the basal half, the outer half of the cell being jet-black; the apical area is deep rufous-brown; the abdominal area of the secondaries is deep crimson to the first median branch; the ochreous spot is obliquely truncated internally; the external area extends inwards so as to fill the second median interspace, and within the cell it extends upwards along the base of the second subcostal branch; instead of being ochreous with a reddish clay-coloured band from the ochreous anal spot, it is reddish clay-coloured with a black band; as above also the markings are snow-white instead of greenish. Expanse of wings 85 millim.

Two examples, Lake Mweru.

This is a far more beautiful species than *P. corinneus*, the contrasts of colouring on both surfaces being much more defined and tasteful; in point of form it differs in the slightly less inarched outer margin of the primaries and more regularly rounded outer margin of the secondaries.

126. Papilio demoleus.

Papilio demoleus, Linnæus, Mus. Lud. Ulr. p. 214 (1764).

Lake Mweru; Zomba, December 1892.

127. Papilio ophidicephalus.

Papilio ophidicephalus, Oberthür, Études, iii. p. 13 (1878).

Lake Mweru.

128. Papilio constantinus.

Papilio constantinus, Ward, Ent. Mo. Mag. viii. p. 34 (1871); Afr. Lep. p. 1, pl. 1. figs. 1, 2 (1873).

Lake Mweru.

129. Papilio merope.

Papilio merope, Cramer, Pap. Exot. ii. pl. cli. A, B (1779).

♂, Rhodesia, Lake Mweru, June 11, 1892.

130. Papilio erinus.

Papilio erinus, Gray, Cat. Lep. Ins. B. M. i. p. 35, n. 127 (1865).

Lake Mweru; Zomba, December 1892 and January 1893.

The Hesperiidæ in the collection are numerous, and so many species have been described of late years, especially by Herr Plötz and Monsieur Mabille, that it has been no light task to work carefully through the accumulation of literature and decide what species are new to science. That the descriptions of Plötz are not easy to follow is a fact, I think, pretty generally admitted, and those who have attempted to recognize his species have not always succeeded in making them evident to their successors. For instance, Herr Ribbe ('Isis,' 1889, p. 261), after quoting the description of *Pamphila ahrendti*, observes :—"It is very difficult, from this short description of Plötz's, to identify *P. ahrendti*. I have therefore had the species figured, by which figure the identification can be gained with certainty." Unhappily, this is far from being a fact, as the figure is a blotchy photolithograph, and might stand for any Hesperiid of the same size; in short, it is utterly useless as an aid to identification. It is a pity that so little work equal to that of Prof. Aurivillius has been produced in Germany, and so little as lucid as that of the late Monsieur Guenée in France. One of the chief difficulties in the identification of Mabille's Hesperiidæ consists in the fact that his new species are frequently placed in the wrong genera.

131. Tagiades flesus.

Hesperia flesus, Fabricius, Spec. Ins. ii. p. 135, n. 621 (1781).

Zomba, December 1892 and January 1893.

132. Sarangesa motozi.

Pterygospidea motozi, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, p. 53.

Lake Mweru; Zomba, January 1893.

133. Sarangesa motozoides?

Sarangesa motozoides, Holland, Ann. & Mag. Nat. Hist. ser. 6, vol. x. p. 288, n. 9 (1892).

Lake Mweru.

134. Sarangesa astrigera, sp. n.

Black-brown, with a faint cupreous gloss; fringes spotted with greyish white; a submarginal series of snow-white dots; indications of a discal series of smaller dots, best defined on the primaries; a minute spot in each discoidal cell; primaries also with two widely separated white points on interno-median area and three small spots in the form of a < beyond the cell: abdomen above black; antennæ black, ringed with white. Wings below more distinctly shot with cupreous than above, in some lights varying to bronzy green; the white dots on primaries nearly as above, but those on secondaries better defined and forming four imperfect series, consisting respectively of two, five, seven, and eight or nine white dots; fringes spotted as above: palpi white below; body greyish. Expanse of wings 33 millim.

Zomba, January 1893.

135. Caprona pillaana.

Caprona pillaana, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, p. 51; Trimen, South Afr. Butt. pl. xii. figs. 6, 6 *a* (1889).

Zomba, January 1893.

136. Caprona jamesoni.

Antigonus jamesoni, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. vi. p. 348 (1890).

Pterygospidea jamesoni, Trimen, P. Z. S. 1891, p. 106, pl. ix. fig. 25.

Mipa stream, Mofwi, August 3, 1892 (*R. C.*).

137. Hesperia dromus.

Pyrgus dromus, Plötz, Mitth. naturw. Vereins, 1884, p. 6, n. 13.

Lake Mweru; Zomba, July and December 1892, January 1893.

138. Acleros philander.

Pamphila philander, Hopffer, Monatsber. Kön. Akad. Wiss. Berlin, 1855, p. 643; Peters's Reise nach Mossamb. v. p. 416, pl. 27. figs. 1, 2 (1862).

Zomba, July 1892.

139. Acleros placidus.

Apaustus placidus, Plötz, Stett. ent. Zeit. 1879, p. 360.

Zomba, December 1892 and January 1893.

140. Oxypalpus ruso.

Pamphila ruso, Mabille, Comptes Rendus Soc. ent. Belge, 1891, clxxxiii.

Zomba, December 1892.

The description of the upper surface of primaries seems rather

vague, but I think, from the striking character of the under-surface markings, there can be little doubt that this is Mabille's species; the upper surface appears to be not much unlike the *Pamphila gisgon* of the same author.

141. Osmodes ranoha.

Pamphila ranoha, Westwood in Oates's 'Matabele-Land,' p. 353 (1881).

Zomba, December 1892 and January 1893.

The Hewitson collection contains two specimens unnamed, labelled "Zanzibar" and "Nyassa" respectively.

142. Heteropterus formosus, sp. n. (Plate LX. fig. 8.)

Black-brown, with an angular ochreous subapical band, constricted or divided at third median branch, and a small spot of the same colour near external angle; secondaries with six submarginal ochreous spots, the fringe usually varied with the same colour; the head and thorax more or less clothed with dull ochraceous hairs: primaries below dark cupreous brown, almost black; costal margin sprinkled with pale yellowish scales; a subcostal longitudinal streak, followed below origin of first subcostal branch by a spot; a shorter streak in the cell; a minute transverse spot at end of cell; the angular band and spot of upper surface bright ochreous; internervular folds terminating in a marginal series of more or less triangular pale yellow spots; outer edge of fringe slightly varied with yellow at apex: secondaries milk-whitish, the submedian interspace pale sordid yellow, traversed towards anal angle by a looped blackish line from submedian vein; all the veins black; a large subbasal oblong spot linking the costal and subcostal veins, an irregular central band from second subcostal branch to submedian vein, and a submarginal macular band, consisting of seven divisions, bright ochreous, edged with black; fringe black, almost wholly tipped with ochreous: palpi below black at base, their fringes at first whitish, then reddish ochreous, faintly tipped with black; pectus and legs clothed with ochreous hair; venter black, with ochreous spots at the sides, creamy white in the centre. Expanse of wings 33–36 millim.

Zomba, December 1892 and January 1893.

Evidently this beautiful species is not rare.

143. Cyclopides quadrisignatus, sp. n. (Plate LX. fig. 9.)

Intermediate between *C. metis* and *ægipan*; purplish brown; a sinuous transverse spot at end of cell, two obliquely placed trifid subapical spots and a larger bifid spot cut by the second median branch, ochreous; a few very short ochreous bristles below the median vein: secondaries with a few fine ochreous hairs in the cell; a bifid spot at end of cell, a smaller squamous spot below apex and another in first median interspace ochreous: body blackish; antennæ ringed with white, club more or less ochreous.

Wings below cupreous brown; primaries with the ochreous spots larger and brighter than above, that of end of cell deeply incised internally; secondaries immaculate. Expanse of wings 31–35 millim.

Zomba, December 1892 and January 1893.

Two somewhat damaged specimens of this distinct species, which at the first casual examination I mistook for *C. malgacha*, from which, however, they are abundantly distinct.

144. Cyclopides midas, sp. n.

Allied to *C. metis*, chiefly differing above in the much greater size and more golden orange colouring of all the spots; there is, however, a well-defined short orange streak below the costa near the base, a nearly complete belt of subbasal spots crossing the wings obliquely; below all the spots are as well defined as above but rather paler, whereas in *C. metis* the under surface of the secondaries is almost immaculate in the female and quite so in the male. Expanse of wings 30 millim.

Zomba, July 1892.

In the Hewitson collection a specimen from Nyasa is associated with *C. metis*, and in the Museum collection is a second specimen, from Victoria Nyanza.

145. Padraona watsoni, sp. n.

Resembles *Telicota bambusæ* of Moore; decidedly larger and rather brighter in colouring; the oblique black band on the primaries with its outer edge acutely produced at first median branch, as in some other species of *Padraona*, though this band does not run inwards to the base; the inner branch of the furca also carried forwards to costa; the outer border, however, has an irregularly zigzag inner edge; the base is greyish green, with a black spot, ill-defined in the male, near the base of the cell, and the male has basal black streaks on costal and internal borders; the ground-colouring of the female is much yellower than that of the male: the pattern of the under surface, but especially on the secondaries, is very similar to that of *Telicota bambusæ*, but the costal border of the primaries is bright yellow, with the differences in the darker markings mentioned as occurring on the upper surface; the secondaries are bright yellow, with the greyish areas of *T. bambusæ* replaced by greenish; the blackish anal patch well-defined in the male, subquadrate, bounded internally and at anal angle by golden orange; the blackish submarginal spot well-defined and continued to costa; the short greyish central band spotted with blackish, and several smaller spots across the basal area; costa greyish. Expanse of wings 40 millim.

Zomba, ♂ July 1892, ♀ January 1893.

It seems to me that generic distinctions employed for species bearing so close a resemblance to one another as the present insect and *Telicota bambusæ* are somewhat arbitrary and not altogether satisfactory; but the Hesperiidæ are such a difficult

family that any characters which will divide the groups of species are welcome.

146. GEGENES LETTERSTEDTI.

Hesperia letterstedti, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, p. 49, n. 3.

Zomba, July 1892 and January 1893.

147. BAORIS FATUELLUS.

Pamphila fatuellus, Hopffer, Monatsber. K. Akad. Wiss. Berlin, 1855, p. 643, n. 25; Peters's Reise nach Mossamb. v. p. 417, pl. 27. figs. 3, 4 (1862).

Lake Mweru; Zomba, July and December 1892, January 1893.

148. BAORIS INCONSPICUA.

Hesperia inconspicua, Bertoloni, Mem. Acc. Bol. 1849, p. 15.

Pamphila inconspicua, Hopffer, Peters's Reise nach Mossamb. v. p. 418 (1862).

Zomba, July 1892.

149. BAORIS AMADHU?

Pamphila amadhu, Mabille, Comptes Rendus Soc. ent. Belge, p. lxxviii (1891).

Zomba, December 1892 and January 1893.

I believe I have correctly identified this species.

150. HALPE NIGERRIMA, sp. n.

Black-brown; the primaries with strong bronze reflections; eight hyaline white spots as follows—two small, fusiform, superposed in the cell, a large quadrate spot below them on first median interspace, two small spots on succeeding interspaces placed obliquely, and two still smaller divided by the fifth subcostal branch, a minute spot at centre of interno-median interspace; a streak of yellowish appressed hair-scales on inner margin; fringe tipped with white at external angle: secondaries with a transverse series of four small cream-coloured spots beyond the cell; fringe tipped with white, most widely at anal angle: abdomen tipped with white; head bright golden-green. Under surface dark cupreous brown with bronze-green and purple reflections: primaries with hyaline spots as above, but the small interno-median spot extended forward and forked; an additional white subcostal streak towards the base: secondaries with a white spot, shot with lavender, at centre of interno-median interspace, and adjoining it, beyond the cell, a zigzag series of five lavender spots forming a large W-shaped pattern; fringe as above· body below white, venter barred with black. Expanse of wings 39 millim.

Zomba, January 1893.

Several of M. Mabille's species seem allied to this, but I have been unable to find one of his descriptions which characterizes it. *H. malthina*, Hewits., seems to be also allied.

151. Halpe lugens.

Pamphila lugens, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 643, n. 26; Peters's Reise nach Mossamb. v. p. 418, pl. 27. figs. 5, 6 (1862).

Zomba, July 1892.

152. Baracus fenestratus, sp. n.

Above almost exactly like *Isoteinon lamprospilus*, but slightly smaller and with the hyaline spots a little smaller; the grey-greenish hairy clothing of the secondaries extending over a much wider area; ground-colouring below like *B. septentrionum*, Wood-Mason, the primaries black with costal and apical areas broadly argillaceous, shading into dust-grey; fringe of the latter colour tipped with white; hyaline spots as above: secondaries golden argillaceous; a longitudinal greyish streak immediately below and bounding the subcostal vein; abdominal area dust-greyish; two small whitish spots on centre of median interspaces; fringe white. Expanse of wings, ♂ 31 millim., ♀ 35 millim.

Zomba, December 1892 and January 1893.

153. Ceratrichia stellata.

Ceratrichia stellata, Mabille, Comptes Rendus Soc. ent. Belge, 1891, p. lxx.

Zomba, December 1892.

154. Aeromachus? johnstoni, sp. n.[1]

♂. Bronze-brown: primaries with two unequal hyaline white dots within the end of the cell and a small subquadrate spot below the lower of them on first median interspace; a dot at basal third of second median interspace, and above it, towards costa, two unequal white dots placed slightly obliquely; base of costa and centre of inner margin slightly dusted with yellowish; posterior two-fifths of fringe tipped with sordid white: secondaries with yellowish hair scales in cell and interno-median interspace; fringe, excepting at apex, sordid white: head, collar, and patagia golden brownish; front of thorax glossed with green; abdomen greyish. Primaries below grey, the apical area and costa lilacine, clouded with blackish; hyaline spots as above; a white diffused streak at base of cell and a small spot across centre of interno-median area: secondaries lilacine-greyish along submedian vein; a dark brown irregular >-shaped band from apex across the disk: fringe of second joint of palpi and anterior femora long and bright yellow; venter greyish white. Expanse of wings 24 millim.

Mipa stream, Mofwi, August 3, 1892.

[1] I have placed this species at the end of the Hesperiidæ because it does not appear to me quite to agree with any of the genera indicated in Lieut. Watson's Revision of the family; from *Aeromachus*, which it most nearly approaches, it differs in the longer terminal joint of the palpi.

P.S.—I find that by some inexplicable oversight the slip of *Rhopalocampta forestan*, Cram. (which was represented in both collections), has dropped out of the MS.

Heterocera.

None of these were obtained by Mr. Crawshay, but Mr. Whyte's collection contained a fair series.

155. Cephonodes hylas.

Sphinx hylas, Linnæus, Mant. i. p. 539 (1771).
Zomba, January 1893.

156. Aellopus hirundo.

Macroglossa hirundo, Gerstäcker, Arch. Nat. xxxvii. p. 360 (1871).
Zomba, December 1892.

157. Chærocampa osiris.

Deilephila osiris, Dalman, Analecta Entom. p. 48, n. 21 (1823).
Zomba, July 1892.

158. Nephele funebris.

Sphinx funebris, Fabricius, Ent. Syst. iii. p. 371, n. 47 (1793).
Zomba, January 1893.

159. Ægocera meneta.

Noctua meneta, Cramer, Pap. Exot. i. pl. lxx. D (1775).
Zomba, July and December 1892 and January 1893.

160. Ægocera fervida.

Ægocera fervida, Walker, Cat. Lep. Het. i. p. 57, n. 4 (1854); Butler, Ill. Typ. Lep. Het. i. p. 12, pl. 5. fig. 1 (1877).
Zomba, December 1892.
A single worn example, with the outer border of the secondaries of half the usual width and tapering to anal angle.

161. Charilina amabilis.

Noctua amabilis, Drury, Ill. Ex. Ent. ii. pl. 13. fig. 3 (1773).
Zomba, December 1892 and January 1893.
The outer border of the secondaries slightly narrower than usual.

162. Xanthospilopteryx superba.

Eusemia superba, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xv. p. 141, pl. 13. fig. 3 (1875).
Zomba, July 1892.

163. Syntomis ceres.

Syntomis ceres, Oberthür, Études, iii. p. 33, pl. 3. fig. 5 (1878).
Zomba, July 1892.
Evidently a common species: it differs from *S. kuhlweinii* in its larger hyaline spots; this distinction, though apparently unimportant, seems to be quite constant.

164. Diospage scintillans, sp. n. (Plate LX. figs. 12, 13.)

Allied to *D. rhebus*, Cramer, and *D. triplax*, Plötz: above black, the primaries brilliantly shot with emerald-green; a broad streak occupying the basal fourth of costa, and three spots beyond it, glittering metallic golden green shaded with golden cupreous; a large oval patch of glittering magenta, varying to purple and edged with fiery copper; five nearly equidistant semihyaline opaline white spots, arranged as follows—one within the end of the cell, one beyond the cell, and three submarginal, the central one of which is largest and crosses the second median branch: secondaries brilliantly shot with prussian blue; a small opaline white spot within extremity of discoidal cell and a larger subanal spot; abdominal border clothed with black hairs: head steel-blue; antennæ black; thorax greenish black, the collar, patagia, and two transverse bands at back of thorax glittering metallic golden green, varying on the patagia to fiery copper; abdomen indigo, imperfectly banded with scattered metallic green scales. Wings below brilliantly shot with prussian blue, which shades into green on apical area of primaries and costa of secondaries; discoidal cell of primaries shaded with purple; costa spotted with metallic pale blue-greenish; all white spots as above: palpi black, legs blue-black; all the tibiæ with a conspicuous white patch; the pectus almost entirely covered with metallic steel-green; abdomen crossed by imperfect bands of the same colour. Expanse of wings 42 millim.

Var. Primaries almost as blue as the secondaries; the three golden-green costal spots, which in the typical form follow the basal streak, wanting; the large metallic patch from median vein to inner margin subquadrate, with a central projecting tooth from its outer margin; in colouring also it differs in being of a fiery copper colour, edged with golden copper; the subapical white spot and the spot near external angle wholly absent; secondaries with the costa purplish, no white spot in the cell, and the subanal spot smaller. Expanse of wings 40 millim.

Zomba, July 1892 and January 1893.

After seeing this magnificent species I am quite satisfied that Cramer's *D. rhebus* is African (not East Indian, as Mr. Kirby has concluded, Syn. Cat. p. 169). Cramer says it was received from Coromandel and the coast of Africa; his first locality, not his second, being unquestionably erroneous.

I should undoubtedly have regarded the variety described above as a distinct species, had there not fortunately been an example intermediate between the two forms in the collection. It is probable, I think, that *D. triplax* of Plötz, which is described as having only three hyaline white spots on the primaries, may also vary in a similar manner; it evidently does not possess the large metallic purplish or cupreous patch, or the smaller metallic golden-green streaks and spots of *D. scintillans*, in which respect the latter is more nearly allied to *D. rhebus*. A fourth species,

probably referable to *Diospage*, is *Glaucopis iridea*, Mabille; but *Sphinx auratus* (Stoll), Cramer, does not belong to the genus.

165. Neurosymploca procrioides, sp. n.

Primaries smoky grey or semitransparent sooty black; secondaries darker, with bright blue gloss: body black; patagia ochreous; venter ochreous with black anal segment. Expanse of wings 32 millim.

Zomba, January 1893.

166. Anomæotes nigrivenosus, sp. n. (Plate LX. fig. 10.)

Allied to *A. tenella*, Holland; orange-tawny; semitransparent primaries, with the veins black; the costa, apex, and a narrow decreasing external border diffused grey; neuration distorted; the second and third subcostal branches on a very short footstalk; upper discocellular continued transversely across the upper radial and uniting close below it with the lower radial, which is thrown forward from the third median branch at an oblique angle; the normal lower discocellular thrown backwards as a forked recurrent vein, its lower furca uniting with the median vein just beyond the second branch: secondaries wider than in *A. tenella*, the outer border narrowly grey; in the type the right-hand wing has partly developed an upper radial vein between the second subcostal branch and the ordinary radial: body tawny ochreous; legs brownish. Expanse of wings 31 millim.

Zomba, July 1892.

In low types of Lepidoptera like the *Phaudinæ*, the neuration seems to be very variable; so that characters which in some groups would be of the utmost importance for generic purposes are seen to be utterly unreliable: in all the most important features of its neuration *A. nigrivenosus* agrees with typical *Anomœotes*.

Staphylinochrous, gen. nov.

Nearest to *Boradia*: primaries elongate triangular; costal vein throwing off three perpendicular veinlets to the margin before the regular branches; first and second branches emitted from a footstalk before the end of the cell and united by an oblique veinlet to the third above its separation from the fifth; the third, fourth, and fifth emitted from a footstalk which throws off the fifth branch halfway between the cell and the furca formed by the third and fourth branches; anterior part of the cell projecting prominently forwards; lower radial and third median branch emitted together from a short footstalk: secondaries with neuration as in *Anomœotes*, but the anterior part of the cell projecting more prominently forwards: body as in *Boradia*, with similar antennæ. Type *S. whytei*.

167. Staphylinochrous whytei, sp. n. (Plate LX. fig. 11.)

Orange-tawny; apical two-sevenths of primaries occupied by a belt of smoky grey, regularly tapering from costa to external angle;

secondaries with a narrow decreasing external border of the same colour from apex to submedian vein; antennæ dark brown; body tawny ferruginous, abdomen tipped with blackish, extremity of tarsi also blackish. Expanse of wings 37 millim.

Zomba, January 1893.

The most Geometriform genus of *Phaudinæ* that I have hitherto seen.

168. Lepista trimenii.

Dyphlebia trimenii, Felder, Reise der Nov., Lep. iv. pl. cvi. fig. 32.

Zomba, July 1892.

169. Deiopeia pulchella.

Tinea pulchella, Linnæus, Syst. Nat. i. p. 534, n. 238 (1758).

Zomba, July 1892.

170. Argina leonina.

Argina leonina, Walker, Lep. Het. xxxi. p. 262 (1864).

Zomba, July 1892.

171. Argina amanda.

Euchelia amanda, Boisduval, Deleg. Voy. ii. p. 597, n. 133 (1847).

Zomba, July 1892 and January 1893.

172. Rhanidophora phedonia.

Bombyx phedonia, Cramer, Pap. Exot. iv. pl. cccxlvii. C (1782).

Zomba, December 1892 and January 1893.

173. Canopus rubripes.

Amerila rubripes, Walker, Lep. Het. xxxi. p. 304 (1864).

Zomba, July 1892.

174. Lacipa bizonoides, sp. n.

Nearest to *L. gracilis*, but differing from all its allies in the absence of black spots from the primaries; these wings sericeous pure white; a spot at the base and two rather broad parallel straight stripes which divide the wing into three equal parts golden orange; outer half of fringe slightly golden: secondaries and abdomen cream-coloured: head buff-coloured; collar and patagia orange, the latter with white fringes; anus blackish; under surface sordid buff-whitish. Expanse of wings 28 millim.

Zomba, January 1893.

175. Artaxa ochraceata.

♀. *Aroa ochraceata*, Walker, Lep. Het. xxxii. p. 327 (1865).

Zomba, January 1893.

The male of this species seems to be rare, only females having come to hand.

176. Olapa fulvinotata, sp. n.

♂. Closely allied to *O. adspersa*, Herr.-Sch.; larger, the primaries and body yellower; the spots on the primaries bright orange instead of black and more conspicuous. Expanse of wings 40–47 millim.

♂, Zomba, December 1892 and January 1893.

The genus *Olapa* is nearly allied to *Lælia*, but may readily be distinguished from the fact that the second and third median branches of the secondaries (veins 3 and 4) are widely separated at their origins, whereas in *Lælia* they are emitted close together; on the other hand, the third median and radial in *Olapa* are closer together than in *Lælia*.

177. Aroa discalis.

Aroa discalis, Walker, Lep. Het. iv. p. 792, n. 1 (1855).

♂, Zomba, January 1893.

178. Leptosoma leuconoe.

Nyctemera leuconoe, Hopffer, Monatsber. Akad. Berlin, 1857, p. 422; Peters's Reise nach Mossamb. v. p. 174, pl. 28. fig. 3 (1862).

Zomba, July and December 1892.

179. Antheua simplex.

Antheua simplex, Walker, Lep. Het. iii. p. 687, n. 1 (1855).

Zomba, July 1892.

180. Phiala costipuncta?

Heteromorpha costipuncta, Herrich-Schäffer, Aus. Schmett. i. fig. 375 (1855).

♀?, Zomba, July 1892.

181. Pseudaphelia apollinaris.

Saturnia apollinaris, Boisduval, Voy. de Deleg. ii. p. 601 (1847).

Zomba, January 1893.

182. Bunæa epithyrena.

Bunæa epithyrena, Maassen & Werning, Beitr. Schmett. figs. 86, 87 (1886).

Zomba, July 1892.

183. Gynanisa maia.

Saturnia maia, Klug, Neue Schmett. pl. 5. fig. 1 (1836).

Zomba, January 1893.

The single example obtained is somewhat aberrant; but the differences from the typical form are not of such a nature that they may not be simply the result of individual variation; I have, therefore, not felt justified in regarding it as a distinct species.

Although the *Noctuæ* are tolerably well represented in the present collection, all the species obtained belong to the "quadrifid" type.

184. Ædia dulcistriga.

Anophia dulcistriga, Walker, Lep. Het. xv. p. 1811 (1858).
Zomba, December 1892.

185. Polydesma umbricola.

Polydesma umbricola, Boisduval, Faune Ent. de Madag. p. 108, n. 1, pl. 13. fig. 5.
Zomba, July 1892.
This species seems to be common throughout Africa.

186. Calliodes rivuligera, sp. n.

Umber-brown, suffused, but especially towards external border, with olivaceous greenish and towards base with slaty greyish; crossed by numerous irregular black stripes, some of which are partly shot with dull blue, but the two following the ocellus on primaries with shining leaden grey; the first four stripes on the primaries irregularly angulated, the fifth falciform, bounding the outer edge of the ocellus, becoming leaden towards costa; sixth stripe arched and undulated; seventh parallel to the sixth, macular; the eighth slender, submarginal, undulated, not reaching the costa; the ninth slender, slightly undulated, marginal; fringe traversed by an indistinct central pale line; ocellus with the ⌣-shaped part bronze-green shaded with olive-brown, edged with pale brown, bordered below with black, the lobe of the ⌣ broadly black externally and crossed by three equidistant metallic leaden bars; the tail of the ⌣ enclosing a perpendicular metallic leaden streak; the V-shaped portion of the ocellus, enclosed by the comma, shining leaden grey, interrupted by longitudinal bars of the ground-colour and bounded on both sides by pure white, more or less triangular spots: secondaries without basal bands; a short bar crossing the cell, followed by two parallel irregularly denticulated angulated bands, then three tolerably regular parallel zigzag stripes, a series of subconfluent diamond-shaped spots, a submarginal zigzag stripe; marginal line and fringe as on primaries: body normal, but darker than in *C. apollina*. Under surface pale brick-red; primaries greyish at external border, which is bounded internally by a blackish zigzag line, interrupted by blackish veins, encloses a series of blackish spots, and is edged externally by a black marginal line; fringe as above; across the disk is a second indistinct interrupted zigzag or lunulated line, interrupted in the middle by two conspicuous superposed black spots; a blackish looped character represents the reniform spot, and on the internomedian interspace there is a blackish longitudinal streak: secondaries with a black discocellular spot; a black lunulated discal stripe, a black dentate-sinuate submarginal line connected with

the black outer margin by black veins, between which is a series of black spots; fringe as above. Expanse of wings 44–53 millim.

Zomba, July 1892 and January 1893.

The minimum measurement is taken from an example in the Museum from Delagoa Bay. The species, if my memory serves, is nearly allied to *C. pretiosissima*, Holland (Ent. Suppl. 1892, p. 94).

187. Calliodes glaucescens, sp. n.

General tint above lavender-greyish; the basal and costal areas of primaries shot with sericeous lavender; the area below and beyond the ocellus bronzy greenish, shaded with yellowish and with golden brown; a belt enclosed by the second to fifth lines pale brownish glossed with pink; outer border greenish grey, fringe grey-brownish; one slender black line, which in certain lights changes to leaden grey and becomes inconspicuous, across basal two-sevenths; all the other lines undulated, beyond the ocellus—the first, which bounds the ocellus externally, sepia-brown, varying to steel-bluish towards costa; second line parallel to the first, glossed throughout with steel-blue; third line abbreviated towards costa, glossed with steel-blue; fourth brown, straight towards inner margin, abbreviated towards costa; the submarginal and marginal lines slender and black; ocellus somewhat similar to that of the preceding species; the ∽-shaped portion bounded externally by a black stripe edged on both sides with yellowish, the lobe black externally, the inner half of the black patch glossed with metallic leaden and edged with white; leaden marking in the tail of the ∽ also white-edged; V-shaped area shot with sericeous lavender and edged with white: secondaries rufescent, slaty greyish towards inner margin and greenish on external border, the fringe of abdominal border brick-red; a small black spot at end of cell, followed by a straight black band, immediately beyond which is a blackish stripe; from this point the veins are shot with steel-blue; three regular parallel dentate-sinuate blackish stripes, glossed with steel-blue, excepting on the internervular folds; a brown dentate-sinuate stripe parallel to the others; submarginal and marginal sinuated black lines: head dark brown, with a red line between the antennæ; collar dark brown, red at the sides; body smoky mouse-grey; abdomen rose-red at the sides. Underside of wings bright opaque reddish orange; black spots at end of discoidal cells, followed by two parallel angulated discal series of spots, black and distinct on the secondaries; a third series of indistinct grey dots, followed on the primaries by a series of grey lunules; a submarginal series of spots, very minute on the primaries, and a marginal series of dots, black: body below rose-red; palpi black externally, tibiæ and tarsi black. Expanse of wings 53–57 millim.

Zomba, December 1892 and January 1893.

This lovely species has very much of the general pattern of the allied genus *Spirama*.

188. Cyligramma rudilinea.

Cyligramma rudilinea, Walker, Lep. Het. xiv. p. 1311, n. 5 (1857).

♂, Zomba, July 1892.

189. Cyligramma latona.

Phalæna (Noctua) latona, Cramer, Pap. Exot. i. p. 20, pl. xiii. B (1779).

Zomba, July 1892 and January 1893.

190. Cyligramma limacina.

Cyligramma limacina, Guérin, Icon. Règne Anim., Ins. pl. 89. fig. 2, texte, p. 520.

Zomba, December 1892 and January 1893.

191. Maxula capensis.

Hypopyra capensis, Herrich-Schäffer, Auss. Schmett. figs. 121, 122.

Zomba, ♀ July 1892, ♂ January 1893.

192. Entomogramma pardus.

Entomogramma pardus, Guenée, Noct. iii. p. 205, n. 1606 (1852).

Zomba, January 1893.

193. Entomogramma nigriceps.

Renodes ? nigriceps, Walker, Lep. Het. xv. p. 1595, n. 6 (1858).

Zomba, January 1893.

194. Dysgonia algira.

Phalæna-Noctua algira, Gmelin, ed. Syst. Nat. i. 5, p. 2547, n. 98.

Zomba, December 1892 and January 1893.

195. Dysgonia derogans.

Ophiusa derogans, Walker, Lep. Het. xv. p. 1832 (1858).

Zomba, January 1893.

196. Grammodes geometrica.

Phalæna-Noctua geometrica, Rossi, Faun. Etr. ii. p. 179.

Zomba, July and December 1892, January 1893.

197. Trigonodes hyppasia.

Phalæna-Noctua hyppasia, Cramer, Pap. Exot. iii. p. 99, pl. ccl. E (1782).

Zomba, January 1893.

198. Drasteria judicans.

Ophiusa judicans, Walker, Lep. Het. xv. p. 1831 (1858).

Zomba, July 1892 and January 1893.

199. Plecoptera, sp. inc.

Allied to *P. resistans*, but the two examples obtained are not in good enough condition to describe, though there is little question as to their representing a species new to science.

Zomba, January 1893.

200. Azazia rubricans.

Ophiusa rubricans, Boisduval, Faune Ent. de Madag. p. 106, n. 11, pl. 16. fig. 1.

Zomba, January 1893.

201. Remigia mutuaria.

Remigia mutuaria, Walker, Lep. Het. xiv. p. 1506, n. 7 (1857).

Zomba, January 1893.

The type was from the Cape of Good Hope.

202. Remigia archesia.

Phalæna-Noctua archesia, Cramer, Pap. Exot. iii. p. 145, pl. cclxxiii.

Zomba, December 1892 and January 1893.

203. Remigia repanda.

Noctua repanda, Fabricius, Ent. Syst. iii. 2, p. 49, n. 133 (1793).

Zomba, December 1892.

204. Lacera capella.

Lacera capella, Guenée, Noct. iii. p. 337, n. 1802 (1852).

Zomba, January 1893.

205. Ophiodes croceipennis.

Ophisma croceipennis, Walker, Lep. Het. xiv. p. 1377, n. 19 (1857).

Zomba, January 1893.

206. Deva commoda.

Plusiodonta commoda, Walker, Lep. Het., Suppl. iii. p. 844 (1865).

Zomba, January 1893.

207. Plusia eriosoma.

Plusia eriosoma, Doubleday in Dieffenbach's 'New Zealand,' i. p. 285.

Zomba, December 1892 and January 1893.

This is one of the most widely distributed of the species of *Plusia*.

208. Hypena abyssinialis.

Hypena abyssinialis, Guenée, Delt. et Pyral. p. 39, n. 44.

Zomba, December 1892.

209. Gonodela brongusaria.

Epione ? *brongusaria*, Walker, Lep. Het. xx. p. 123, n. 14 (1860).

Zomba, January 1893.

210. Gonodela kilimanjarensis.

Gonodela kilimanjarensis, Holland, Ent. Suppl. 1892, p. 95.

Zomba, July and December 1892, January 1893.

Moeschler's *Semiothisa largificaria* (Abhandl. Senck. nat. Ges. xv. p. 95, fig. 20, 1887) seems nearly allied to this species. One of our examples also nearly resembles *G. maligna* from Japan.

211. Gonodela zombina, sp. n.

Not unlike the preceding species; granite-grey, with black discocellular spots; the inner oblique angulated line of primaries ill-defined; the transverse dark grey mottling better defined; the external area from the second line considerably darker than the remainder of the wing-surface, but this difference is less pronounced in a tapering patch immediately beyond the line and extending upwards from inner margin of both wings and on the external border of the secondaries; the outer line of primaries more oblique than in *G. kilimanjarensis*, and continuous with the inner line of secondaries; the outer line of the latter wings slightly nearer to outer margin: wings below white, coarsely mottled with dark grey, the two transverse lines of the upper surface reproduced, the inner one in grey mottling; external area grey-brown, slightly reddish towards apex of primaries, with white nebula towards the middle, the secondaries also with a squamose apical spot; veins of all wings ochreous; costa of primaries buff: body below cream-coloured, speckled with dark grey; legs slightly yellower. Expanse of wings 40 millim.

Zomba, July and December 1892, January 1893.

Compared with *G. kilimanjarensis*, this species has the costal margin of the primaries longer and the outer margin consequently more oblique; the angle of the secondaries is also slightly more defined.

212. Tephrina johnstoni, sp. n.

Greyish white, mottled with fuliginous grey; discocellular spots black, almost obliterated by the dark transverse lines; the primaries crossed obliquely by four lines, the first three angulated towards costa, the first near the base, the second crossing the end of the cell, slightly diverging from the first, but parallel to the third, which is blackish, undulated, its angle almost filled in by an irregular perpendicular dark grey spur from lower radial to sub-

costal vein; fourth line submarginal, angulated near the inner margin, sinuous and running outwards to apex above the angle; between the third and fourth lines a grey nebulous streak runs perpendicularly to the costa, leaving a triangular patch of white at apex; a slightly lunulated black marginal line; fringe traversed by a fuliginous grey line and spotted at the extremities of the veins: secondaries crossed by three blackish lines, the first sub-angulated, crossing the end of the cell, the second arched and undulated, the third greyer than the others, slightly undulated, running from apex to anal angle, the area enclosed by the second and third lines clouded with grey: head and collar brown, vertex whitish; abdomen sericeous brownish. Wings below purer white, with all the markings more sharply defined, the veins rufous-brown, yellowish towards the base; the costa of primaries testaceous: pectus white; legs mottled with fuliginous grey; vertex brassy yellowish at the sides. Expanse of wings 28 millim.

Zomba, December 1892 and January 1893.

We have an example of this species in the Museum from Natal; it does not appear to be very closely allied to any known species, but in some respects approaches *T. observata*.

213. Stemorrhages sericea.

Phalæna Pyralis sericea, Drury, Ill. Ex. Ent. ii. p. 9, pl. 6. fig. 1.

Zomba, December 1892.

214. Haritalodes multilinealis.

Botys multilinealis, Guenée, Delt. et Pyral. p. 337, n. 380.

Zomba, January 1893.

215. Lygropia muscerdalis.

Botys muscerdalis, Zeller, Lep. Caffr. p. 43.

Zomba, January 1893.

216. Cadorena sinuata.

Phalæna sinuata, Fabricius, Ent. Syst. iii. p. 208, n. 295 (1793).

Zomba, January 1893.

The four preceding *Pyrales* are the only representatives in the collection of the so-called Micro-Lepidoptera.

EXPLANATION OF PLATE LX.

Fig. 1. *Periplysia johnstoni*, ♂, p. 647.
2. *Charaxes whytei*, ♂, p. 649.
3. *Junonia aurorina*, ♂, p. 651.
4. *Junonia trimenii*, ♂, p. 651.
5. *Crenis crawshayi*, ♂, p. 654.
6. *Teracolus rhodesinus*, ♂, p. 663.
7. *Belenois diminuta*, ♀, p. 666.
8. *Heteropterus formosus*, ♂, p. 670.
9. *Cyclopides quadrisignatus*, ♂, p. 670.
10. *Anomœotes nigrivenosus*, ♀, p. 676.
11. *Staphylinochrous whytei*, ♂, p. 676.
12, 13. *Diospage scintillans*, ♀ ♀, p. 675.